OIPE

RAW SEQUENCE LISTING                          DATE: 07/18/2001
PATENT APPLICATION:  US/09/545,199B C     TIME: 09:31:07

Input Set : A:\6227.txt
Output Set: N:\CRF3\07182001\I545199B.raw

*Does Not Comply*
*Corrected Diskette Needed*
*See p. 5*

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 3 <110> APPLICANT: Lowery E., David
 4         Fuller E., Troy
 5         Kennedy J., Michael
 7 <120> TITLE OF INVENTION: Anti-Bacterial Vaccine Compositions
 9 <130> FILE REFERENCE: 28341/6227.1
11 <140> CURRENT APPLICATION NUMBER: 09/545,199B
12 <141> CURRENT FILING DATE: 2000-04-06
14 <150> PRIOR APPLICATION NUMBER: 60/153,453
15 <151> PRIOR FILING DATE: 1999-09-10
17 <150> PRIOR APPLICATION NUMBER: 60/128,689
18 <151> PRIOR FILING DATE: 1999-04-09
20 <160> NUMBER OF SEQ ID NOS: 169
22 <170> SOFTWARE: PatentIn Ver. 2.0
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**ERRORED SEQUENCES**

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1993 <211> LENGTH: 2110
1994 <212> TYPE: PRT
1995 <213> ORGANISM: Pasteurella multocida
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2002              20                  25                  30
2004 Glu Arg Ser Val Tyr Asn Ile Gly Asp Ile Tyr Ala Ser Lys Lys Leu
2005          35                  40                  45
2007 Thr Val His Thr His Asn Leu Ile Asn Asp Val Arg Leu Ser Gly Asn
2008      50                  55                  60
2010 Val Ser Tyr Lys Pro Ile Gly Ser Ser Arg Asp Tyr Asp Ile Ser Arg
2011 65                  70                  75                  80
2013 Val Ala Val His Gly Trp His Asn Asn Val Tyr Lys Leu Asn Leu Asn
2014              85                  90                  95
2016 Leu Gln Glu Gln Asp Lys Thr Asp Ile Lys Val Val Lys Met Gly Ala
2017          100                 105                 110
2019 Ile Arg Ser Asp Gly Asp Phe Asp Phe Lys Gly Ile Lys Ala Thr Ser
2020          115                 120                 125
2022 Ser Glu Ser Lys Pro Gln Leu Ile Asn His Gly Leu Ile Asn Val Lys
2023      130                 135                 140
2026 Gly Thr Phe Asn Ala Glu Ala Asp Gln Val Val Asn Gln Met Lys Ala
2027 145                 150                 155                 160
2029 Phe Asn Gln Asn Ala Leu Ala Ser Val Phe Lys Asn Pro Ala Lys Ile
2030              165                 170                 175
2032 Thr Met Tyr Tyr Gln Pro Leu Thr Arg Tyr Ile Trp Thr Pro Leu Ser
2033              180                 185                 190
2035 Gly Asn Ala Ser Arg Glu Phe Asn Asn Leu Glu Ser Phe Leu Asp Ala
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RAW SEQUENCE LISTING                          DATE: 07/18/2001
PATENT APPLICATION:  **US/09/545,199B**          TIME: 09:31:08

Input Set : **A:\6227.txt**
Output Set: **N:\CRF3\07182001\I545199B.raw**

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2038 Leu Phe Gly Ser Thr Thr Ile Leu Lys Ser Ser Phe Tyr Ser Thr Glu
2039      210                    215                    220
2041 Asn Phe Ser Ala Tyr Gln Leu Leu Ser His Ile Gln His Ser Pro Met
2042 225                    230                    235                    240
2044 Tyr Gln Lys Ala Met Ala Gln Val Phe Gly Ala Glu Trp His Ser Lys
2045                    245                    250                    255
2047 Ser Tyr Asp Glu Met Arg Asn Lys Trp Lys Ser Phe Lys Glu Asn Pro
2048                    260                    265                    270
2050 Thr Asp Phe Ile Tyr Tyr Pro Ser Glu Lys Ala Lys Ile Leu Ala Gly
2051           275                    280                    285
2053 Lys Leu Glu Gly Lys Leu Thr Thr Leu Gln Asn Gly Glu Tyr Ala Glu
2054      290                    295                    300
2056 Arg Gly Lys Phe Asp Glu Ser Ile Gln Ile Gly Lys His Gln Leu Ser
2057 305                    310                    315                    320
2059 Leu Pro Ser Val Glu Leu Lys Ala Glu Phe Ser Asp Lys Glu Arg Leu
2060                    325                    330                    335
2062 Glu Glu Asp Gly Val Asp Leu Ser Ser Ile Ala Glu Leu Leu Glu Met
2063                    340                    345                    350
2065 Pro Asn Leu Phe Ile Asp Asn Ser Ile Gln Leu Glu Lys Lys Lys Leu
2066           355                    360                    365
2068 Ser Pro Ile Glu Asp Leu Asp Glu Glu Pro Arg Lys Asn Leu Asp Ile
2069      370                    375                    380
2071 Glu Glu Ser His Ser Asn Ser Ser Asp Asp Val Leu Ser Met Asn Asp
2072 385                    390                    395                    400
2074 Asp Glu Ser Asp Thr Asp Asp Ser Lys Trp Ser Met Gly Asn Asp Glu
2075                    405                    410                    415
2077 Lys Glu Met Pro Asp Asp Lys Leu Gly Ile Ser Arg Asp Asp Arg Gly
2078                    420                    425                    430
2080 Asn Lys Pro Pro Arg Thr Asp Pro Thr Val Asp Tyr Leu Asn Pro Asp
2081           435                    440                    445
2083 Glu Phe Phe Glu Asn Gly Tyr Leu Leu Asn Glu Leu Leu Gln Glu Leu
2084      450                    455                    460
2087 Gly Glu Glu Pro Leu Leu Lys Glu Gly Glu Asp His Phe Lys Arg Ser
2088 465                    470                    475                    480
2090 Thr Asn Leu Val Arg Leu Gly Glu Arg Asp Arg Gln Asn Arg Glu Lys
2091                    485                    490                    495
2093 Arg Glu Lys Glu Gly Tyr Phe Asp Leu Pro Gly Thr Leu Asp Met Lys
2094           500                    505                    510
2096 Leu Gln Glu Leu Phe Glu Lys Arg Lys Gln Lys His Glu Ala Glu Gln
2097      515                    520                    525
2099 Lys Ala Arg Ile Glu Lys Ala Leu Leu Gln Lys Ser Glu Gln Gln Glu
2100      530                    535                    540
2102 Lys Arg Val Glu Glu Arg Lys Gln Glu Glu Lys Arg Gln Ala Gln Asp
2103 545                    550                    555                    560
2105 Lys Ile Ala Lys Gln Val Glu Ile Ala Lys Glu Met Gln Arg Val Glu
2106                    565                    570                    575
2108 Glu Ile Arg Gln Arg Glu Lys Gln Leu Ala Ile Gln Leu Gln Glu Glu
2109           580                    585                    590
```

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2111 Glu Lys Lys Gln Gln Glu Glu Lys His Leu Ser Glu Glu Lys Lys Gln
2112     595             600             605
2114 Ala Glu Gln Lys Gln Lys Ala Glu Glu Lys Val Ala Gln Glu Arg Leu
2115     610             615             620
2117 Asp Ile Glu Gln Gln Lys Ala Tyr Glu Glu Met Ala Lys Arg Glu Ala
2118 625             630             635             640
2120 Glu Ala Ser Lys Asn Val Leu Leu Lys Ala Ile Asp Glu Glu Arg Pro
2121         645             650             655
2123 Lys Val Glu Thr Asp Pro Leu Phe Arg Thr Lys Leu Lys Tyr Ile Asn
2124         660             665             670
2126 Gln Asp Asp Tyr Ala Gly Ala Asn Tyr Phe Phe Asn Lys Val Gly Leu
2127         675             680             685
2129 Asn Thr Lys Gly His Gln Lys Val Asn Val Leu Gly Asp Asn Tyr Phe
2130     690             695             700
2132 Asp His Gln Val Ile Thr Arg Ser Ile Glu Lys Lys Val Asp Asn His
2133 705             710             715             720
2135 Leu Asn Gln Lys Tyr Asn Leu Ser Asp Val Glu Leu Val Lys Gln Leu
2136         725             730             735
2138 Met Asp Asn Ser Thr Thr Gln Ala Gln Glu Leu Asp Leu Lys Leu Gly
2139         740             745             750
2141 Ala Ala Leu Thr Lys Glu Gln Gln Ala Asn Leu Thr Gln Asp Ile Val
2142         755             760             765
2144 Trp Tyr Val Lys Thr Lys Val Lys Gly Lys Asp Val Phe Val Pro Lys
2145     770             775             780
2148 Val Tyr Phe Ala Ser Glu Thr Leu Val Glu Ala Gln Lys Leu Gln Gly
2149 785             790             795             800
2151 Leu Gly Thr Gly Thr Ile Arg Val Gly Glu Ala Lys Ile Lys Ala Lys
2152             805             810             815
2154 Asp Val Val Asn Thr Gly Thr Leu Ala Gly Arg Lys Leu Asn Val Glu
2155             820             825             830
2157 Ala Ser Asn Lys Ile Lys Asn Gln Gly Ser Ile Leu Ser Thr Gln Glu
2158         835             840             845
2160 Thr Arg Leu Val Gly Arg Lys Gly Ile Glu Asn Val Ser Arg Ser Phe
2161     850             855             860
2163 Ala Asn Asp Glu Leu Gly Val Thr Ala Gln Arg Ser Glu Ile Lys Thr
2164 865             870             875             880
2166 Glu Gly His Leu His Leu Glu Thr Asp Lys Asp Ser Thr Ile Asp Val
2167             885             890             895
2169 Gln Ala Ser Asp Ile Lys Ala Lys Thr Ser Phe Val Lys Thr Gly Asp
2170         900             905             910
2172 Val Asn Leu Lys Asn Thr Tyr Asn Thr Lys His Ala Tyr Arg Glu Lys
2173         915             920             925
2175 Phe Ser Pro Ser Ala Leu Gln Val Ala Glu Leu Asp Val Ala Gly Leu
2176         930             935             940
2178 Lys Val Pro Leu Leu Gly Val Ser Ser Pro Ser Ser Tyr Ser Glu His
2179 945             950             955             960
2181 Thr Ser Glu Ala Thr Ser Glu Gly Ser Ile Phe Glu Val Gly His Leu
2182             965             970             975
2184 His Leu Ala Val Asp Arg Asp Val Asn Gln Ala Gly Ser Lys Ile Lys
```

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2185          980            985            990
2187 Ala Lys Tyr Thr Thr Gly Val Val Lys Gly Asn Phe Asn Thr Glu Ala
2188          995            1000           1005
2190 Gly Lys Asn Ile Lys His Val Glu Lys Glu Glu Tyr Ser Ser Gln Leu
2191     1010           1015           1020
2193 Phe Ala Ser Ala His Ala Ser Gly Gly Gly Thr Ser Val Arg Tyr Asp
2194 1025           1030           1035           1040
2196 Tyr Asn Ser Gln Asp Gly Gly Asn Ala Ser Val Gly Val Pro Thr Asn
2197          1045           1050           1055
2199 His Thr Gly Val Gly Ala Glu Ala Gly Met Ser Phe Thr His Thr Lys
2200          1060           1065           1070
2202 Asp Lys Glu Thr Leu Leu Thr His Thr Asn Ser Glu Leu Gln Val Lys
2203     1075           1080           1085
2205 His Gly Lys Leu His Val Leu Gly Tyr Ala Asp Ile Gly Gly Val Asp
2206     1090           1095           1100
2209 Ile Asn Thr Lys Leu Pro Glu Asp Ala Gln Ser Lys Ala Gln Lys Glu
2210 1105           1110           1115           1120
2212 Ile Ala Ala Ser Lys Pro Glu Lys Thr Glu Gln Ser Ala Gln Asp Val
2213          1125           1130           1135
2215 Ala Gln Ala Gln Ser Asn Ala Asn Lys Asp Lys Glu Asn Lys Ala Pro
2216          1140           1145           1150
2218 Glu Ile Lys Glu Leu Ser Glu Ala Glu Ile Ala Asp Leu Met Ser Glu
2219     1155           1160           1165
2221 Lys Ser Lys Ala Tyr Phe Asp Asp Phe Ala Glu Gln Ala Lys Lys Ala
2222     1170           1175           1180
2224 Pro Glu Asn Asn Arg Phe Glu Leu Ser Ala Lys Glu Ile Lys Ser Ser
2225 1185           1190           1195           1200
2227 Lys Gln Lys Asp Gln Tyr Asp His Glu Ser Glu Arg Thr Thr Phe Lys
2228          1205           1210           1215
2231 Val Gly Pro Glu Ala Glu Ala His Ser Ala Val Ala Asp Met Val Ser
2232          1220           1225           1230
2234 His Leu Val Lys Glu Tyr Arg Asp Ala Gln Asn Gly Thr Lys Gln Asp
2235     1235           1240           1245
2237 Gly Thr Val Ala Leu Gln His Ala Ser Asp Val Leu Asn Ile Val Thr
2238     1250           1255           1260
2240 Gly Asp Leu Ala Gly Ser Ser Ala Lys Leu Ser Val Glu Arg Thr His
2241 1265           1270           1275           1280
2243 Glu Thr Lys Arg Thr Thr Glu Thr Gly Asp Ile Val Thr Lys Ile Gly
2244          1285           1290           1295
2246 Gly Asn Val Thr Leu Ser Ala Arg Ser Gly Ser Val Asn Leu Lys Asn
2247          1300           1305           1310
2249 Val Gln Ser Asp Glu Gln Ala Asn Leu Thr Leu Arg Ala Lys Glu Asp
2250     1315           1320           1325
2252 Val Asn Val Leu Ser Gly Glu Lys Thr Arg Glu Thr Thr Glu Thr Val
2253     1330           1335           1340
2255 Ser Arg Gln Lys Leu Ser His Gly Val Asn Ala Gly Cys Ser Met Met
2256 1345           1350           1355           1360
2258 Ser Gly Ala Cys Thr Ala Gly Val Ser Thr Ser Leu Glu Gly Asn Glu
2259          1365           1370           1375
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RAW SEQUENCE LISTING         DATE: 07/18/2001
PATENT APPLICATION: **US/09/545,199B**    TIME: 09:31:08

Input Set : **A:\6227.txt**
Output Set: **N:\CRF3\07182001\I545199B.raw**

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      2262          1380              1385              1390
      2264 Ala Arg Asn Met Lys Val Glu Ala Gly Arg Asp Phe Asn Val Val Ser
      2265          1395              1400              1405
      2267 Ser Asn Ile Asp Ala Asp Lys Leu Asp Leu His Val Lys Gly Lys Thr
E--> 2268  ← 1410              1415              1420
      2270 Asn Val Val Ser Lys Gln Asp Thr Leu Gln Lys Val Thr His Gly Val
      2271 1425              1430              1435              1440
      2273 Asp Tyr Asn Leu Ser Ala Gly Val Ala Leu Ser Ser Ala Thr Ile Ala
      2274          1445              1450              1455
      2276 Thr Pro Thr Gly Asn Val Gly Phe Gly Tyr Thr Asn Glu Thr Glu Ser
      2277          1460              1465              1470
      2279 Lys Arg Thr Val Asn Gln Gln Ala Gly Ile Lys Ala Asn Lys Ile Thr
      2280          1475              1480              1485
      2282 Gly Gln Thr His Asp Leu Asn Leu Glu Gly Gly Tyr Leu Val Ser Asn
      2283     1490              1495              1500
      2285 Asp Lys Asp Asn Gln Leu Lys Val Thr Gly Asp Val Thr Thr Lys Ala
      2286 1505              1510              1515              1520
      2288 Leu His Asp Gln His Asp Lys Asp Gly Gly Thr Phe Gly Leu Ser Val
      2289          1525              1530              1535
      2291 Gly Ile Ser Glu Arg Gly Thr Thr Ala Phe Asn Val Arg Gly Gly Arg
      2292          1540              1545              1550
      2294 Ala Glu Gln Lys His Tyr Asn Ala Thr Gln Lys Ser Thr Leu Ser Gly
      2295          1555              1560              1565
      2297 Val Asp Thr Ser Gln Ala Asn Val Ser Gly Gln Val Asn Thr Asp Leu
      2298     1570              1575              1580
      2300 Thr Lys Ala Lys Ala Val Thr Arg Asp Asp Thr Tyr Ala Ser Thr Gln
      2301 1585              1590              1595              1600
      2303 Phe Ser Phe Glu Val Ala Asp Ile Val Glu Leu Gly Gln Arg Ala Lys
      2304          1605              1610              1615
      2306 Asn Lys Leu Ser Ala Pro Asn Asn Asp Thr Asp Met Ala Ser Gly Ser
      2307          1620              1625              1630
      2309 Thr Leu Arg Ser Arg Ser Thr Thr Glu Glu Ala Asp Val Pro Thr Thr
      2310     1635              1640              1645
      2312 Arg Ser Arg Val Thr Asp Glu Ala Asp Ser Val Ser Val Lys Asn Pro
      2313     1650              1655              1660
      2315 Ile Tyr Glu Ser Ala Asp Ala Val Val Pro Thr Pro Arg Ser Arg Asn
      2316 1665              1670              1675              1680
      2318 Val Asp Ser Thr Asp Leu Val Asp Asn Pro Leu Tyr Ala Ser Ala Thr
      2319          1685              1690              1695
      2321 Thr Lys Ala Asn Ile His Asp Tyr Glu Glu Ile Pro Ala Val Tyr Ser
      2322          1700              1705              1710
      2324 Lys Val Gly Asp Asn Asn Ala Asp Leu Val Arg His Lys Thr Ala Thr
      2325          1715              1720              1725
      2327 Ser Asp Glu His Leu Tyr Ala Glu Ile Asn Glu Pro Thr Tyr Ser Arg
      2328     1730              1735              1740
      2331 Val Gly Asp Lys Asn Ala Asp Met Arg Arg His Asn Ala Ala Gly Thr
      2332 1745              1750              1755              1760
      2334 Thr Asp Tyr Ala Asp Val Val Gln Ala His Thr Arg Lys Ala Asp Asp
```

*misaligned amino acid number. Number cannot be under two aminos. Move one space to the left.*

```
2335                1765              1770              1775
2337 Pro Leu Pro Ala Leu Pro Asn Gln Gly Lys Ala Arg Thr Val Asn Asp
2338            1780              1785              1790
2340 Gly Ser Glu His Ile Tyr Thr Asp Ile Ser Asp Val Gly Thr Gln Thr
2341         1795              1800              1805
2343 Lys Ala Ile Asp Ser Thr Tyr Ala Thr Val Gly Met Pro Lys Ala Asn
2344      1810              1815              1820
2346 Ala Val Asn Leu Ile Gly Gln Asn Gly Leu Gly Ser Ile Tyr His Ser
2347 1825              1830              1835              1840
2349 Pro Asp Ser Ala Tyr Lys Thr Trp Gln Leu Leu Asp Gln Phe Ala Asn
2350            1845              1850              1855
2352 Lys Gly Gly Asp Ala Val Phe Leu Arg Pro Ala Thr Glu Met Lys Cys
2353            1860              1865              1870
2356 Ala Gly Ala Pro Leu Lys Tyr Thr Phe Ile Val Arg Asp Tyr Leu Leu
2357         1875              1880              1885
2359 Arg Arg His Thr Leu Asp Lys Ser Arg Leu Phe Tyr Asn Ala His Asn
2360      1890              1895              1900
2362 Lys Thr Leu Phe Ser Val Pro Ile Val Asp Ala Lys Val Lys Met Leu
2363 1905              1910              1915              1920
2365 Phe Ala Glu Lys Asn Ile Gln Val Asn Tyr Asp Arg Ser Leu Thr Ala
2366            1925              1930              1935
2368 Ile Asp Leu Ser Lys Arg Ile Ala Thr Phe Asn Ser Pro Glu Gly Val
2369            1940              1945              1950
2371 Val Glu Val Pro Tyr Asp Phe Ile Asn Val Val Pro Pro Met Arg Ala
2372         1955              1960              1965
2374 Pro Asp Ala Val Arg Gln Ser Ala Leu Ala Trp Gln Glu Gly Lys Trp
2375      1970              1975              1980
2377 Ala Asn Asp Gly Trp Val Glu Val Glu Lys His Thr Leu Arg His Arg
2378 1985              1990              1995              2000
2380 Arg Tyr Ala Asn Val Phe Ala Val Gly Asp Val Ala Gly Val Pro Lys
2381            2005              2010              2015
2383 Gly Lys Thr Ala Ala Ser Val Lys Trp Gln Val Pro Val Ala Val Ala
2384            2020              2025              2030
2386 His Leu Leu Ala Glu Leu Glu Gly Lys Pro Cys Asp Glu Ile Tyr Asn
2387         2035              2040              2045
2389 Gly Tyr Thr Ser Cys Pro Leu Ile Thr Gln Leu Gly Lys Gly Met Leu
2390      2050              2055              2060
2392 Val Glu Phe Asp Tyr Asn Asn His Leu Thr Pro Ser Phe Pro Gly Val
2393 2065              2070              2075              2080
2395 Ile Ala Pro Leu Glu Glu Leu Trp Ala Thr Trp Ala Ile Lys Thr Leu
2396            2085              2090              2095
2398 Gly Leu Lys Pro Thr Tyr Leu Gly Met Leu Arg Gly Leu Ala
2399         2100              2105              2110
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**VERIFICATION SUMMARY**          DATE: 07/18/2001
PATENT APPLICATION:  **US/09/545,199B**     TIME: 09:31:11

Input Set : **A:\6227.txt**
Output Set: **N:\CRF3\07182001\I545199B.raw**

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L:2268 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:16
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L:3840 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27
L:3843 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27
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L:9357 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:72
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L:11976 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:102
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L:12304 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:103